

REMARKS/ARGUMENTS

Favorable reconsideration of the present application is respectfully requested.

Experiment 2 in Table 1 is now designated as a comparative experiment, since it is outside of the claimed range.

Claim 5 has been canceled, and the subject matter thereof has been incorporated into Claim 1.

Claims 15-19 have been withdrawn from consideration.

Claims 3 and 9 have been amended responsive to the rejection and objection under 35 U.S.C. §112, which are believed to be moot.

According to a feature of the invention now set forth in Claim 1, in a process for producing a ceramic sheet having a thickness of from 1-10 mm by using an extrusion molding machine in which a discharge outlet of a twin screw extruder and a material feed opening of a single crew extruder are connected, a kneading portion of the twin screw extruder occupies from 30-70 vol% of the twin screw extruder. This volume range has been found to be critical. In particular, if the proportion of the kneading portion is less than 30% by volume, there may occur an undesirable dispersion of the density of the ceramic sheet, whereas if the proportion of the kneading portion is greater than 70% by volume, excessive heat generation will decrease fluidity and may prevent stable sheet quality (see paragraph bridging pages 10-11). For example, the proportion of the kneading portion is 80% by volume in (comparative) Experiment 2 of Table 1, leading to a viscosity of 3,500 Pa•sec. As is explained at lines 22-27 of page 13 in the present specification, a viscosity exceeding 3,000 Pa•sec can create flow marks.

Claims 1-14 were rejected under 35 U.S.C. §103 as being obvious over U.S. patent 5,213,737 (Ford et al) in view of Japanese patent publication 11-21174 or Japanese patent publication 2000-238023. According to the Office Action, Ford et al teaches “the basic

claimed process of extruding a ceramic article” using a twin screw extruder and a single screw extruder, while JP ‘174 teaches extruding ceramic materials in sheet form, and JP ‘023 teaches a sheet thickness of 1.175 mm.

With respect to Claims 2-14, including Claim 5 whose subject matter has been incorporated into Claim 1, the Office Action did not specifically address the features of these claims but merely stated that these claims “are open to a broad reasonable interpretation and they do not appear to claim any features that are not disclosed or rendered obvious in view of the applied art.” This rejection is respectfully traversed with respect to the subject matter of Claim 5 has now incorporated into Claim 1.

More particularly, Claim 1 now recites a particular proportion for the kneading portion of the twin screw extruder. Moreover, the specification describes criticality for this range (paragraph bridging pages 10-11). In view of the failure of the prior art to teach this range or its criticality, it is respectfully submitted that amended Claim 1 defines over Ford et al in view of JP ‘174 and JP ‘023.

Claims 1-14 were also rejected under 35 U.S.C. §103 as being obvious over U.S. patent publication 2002/0014710 (Tsuruta et al) in view of Ford et al, U.S. patent 4,663,103 (McCullough et al) or the “Extruded Plastics” handbook article. Here again, the Office Action did not identify the manner in which the dependent claims 2-14 were rendered obvious by the prior art, other than to state that Claims 2-14 “are open to a broad reasonable interpretation.” Here again, however, in view of the description of criticality for the claimed kneading proportion, as found in the paragraph bridging pages 10-11 of the specification, and in view of the failure of the prior art to teach this critical proportion, it is respectfully submitted that the amended claims define over this prior art.

Applicants therefore believe that the present application is in a condition for allowance and respectfully solicit an early notice of allowability.

Respectfully submitted,

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